

## THE DEVELOPMENT OF LC GENERIC ANALYTICAL METHODS TO FIGHT COUNTERFEIT NSAIDS USING DESIGN SPACE OPTIMISATION STRATEGY

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Counterfeit of medicines is highly problematic throughout developing countries. First it poses a direct threat to the lives of patients. Second, it contributes to the development of drug-resistant strains, dramatic for killing diseases such as malaria, infections, and to lack of symptoms relieve such as pain and fever, etc. A picture of results published from large scale studies illustrates the situation in some African countries where it has even been estimated up to 80% of medical products counterfeit [1, 2].

Non-steroidal anti-inflammatory drugs (NSAIDs) are used against pain, fevers of various origins and inflammation. They are widely prescribed throughout the world. Many of them are associated with side effects. These drugs are often used in self-medication, as their purchase is often unrestricted over the Internet. The risk of administration of uncontrolled medicines is thus naturally greater. However, health authorities at national, regional and international levels are still trying to fight against this scourge by the application of several strategies that needs to be reinforced through adequate analytical methods for quality control. It is important to note that, to help their use, these analytical methods must be generic, fast and have specific detection. In this context, a strategy focused on three axes is presented: At first, generic analytical methods were developed by means of experimental design combined with a novel Design Space optimisation strategy [3]. It aimed at detecting and tracing simultaneously 18 NSAIDs drugs, 5 pharmaceutical conservatives, paracetamol, chlorzoxazone, caffeine and salicylic acid. Liquid Chromatography combined with UV detection was considered. In order to provide faster analysis and reduce solvent consumption, a transfer to Ultra High Performance Liquid Chromatography also combined with UV detection was the second part of the planned study. Finally, the quantitative methods were applied to analyze several drugs marketed in the Democratic Republic of Congo. On the basis of the dramatic results obtained, it was confirmed that substandard and counterfeit medicines remain a crucial problem on public health in low-income countries.

### References

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